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We hereby certify that

Fabiana Lopes Rocha

participated in the

IMC10 International Mammalogical Congress,

held at The Centro de Congresos y Exposiciones, Mendoza, Argentina, from August 9th to 14th, 2009.

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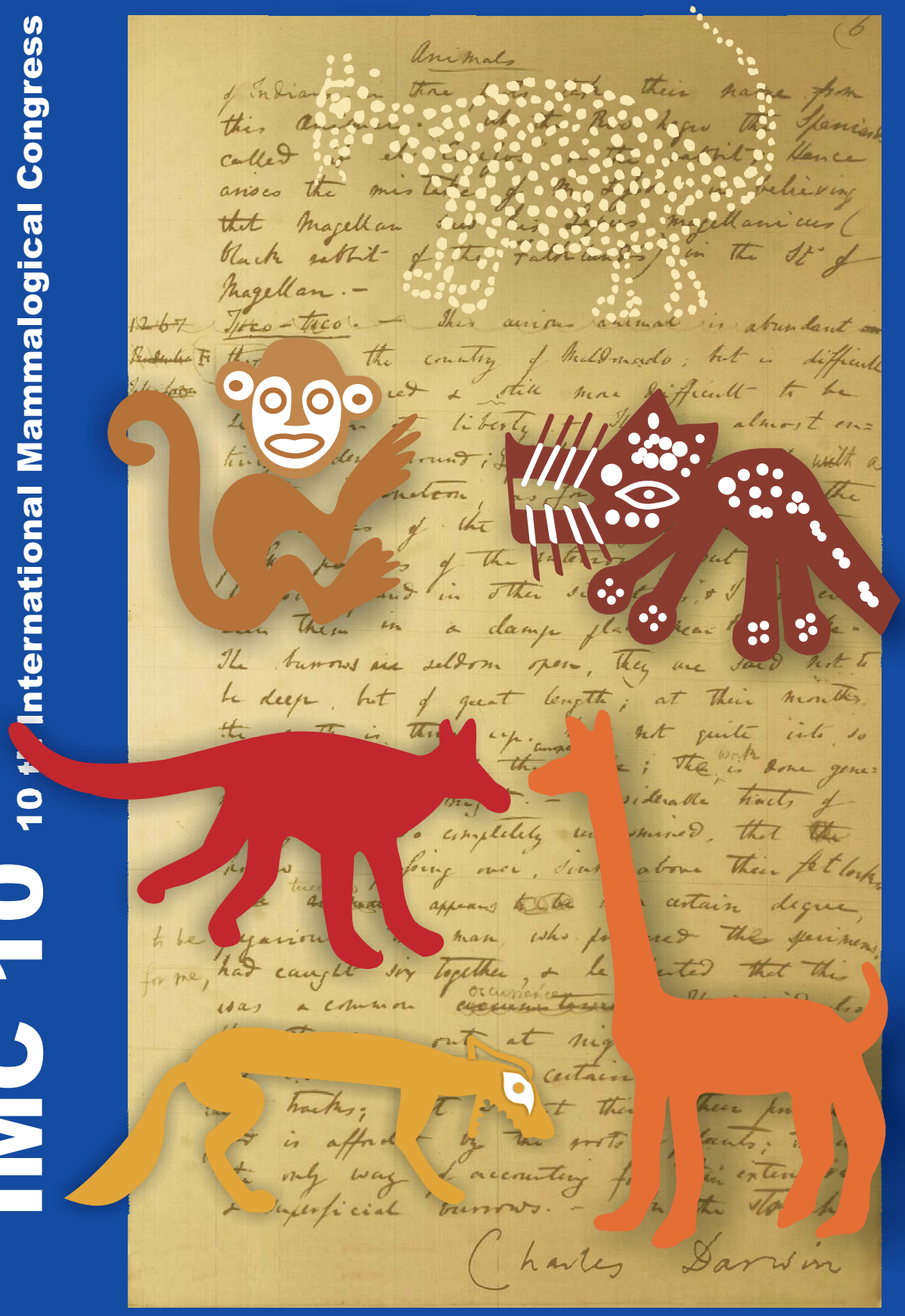
ABSTRACTS

IMC 10 10th International Mammalogical Congress

Mendoza, Argentina, 9 - 14 August 2009



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MANED WOLF CONSERVATION STRATEGIES IN THE SERRA DA CANASTRA REGION, BRAZIL

Rogério Cunha de Paula, Flávio Henrique G. Rodrigues, Ronaldo G. Morato, Eduardo Eizirik, Nucharin Songsasen, Jean Pierre Santos, Joares A. May Junior, Fernanda C. de Azevedo, Fabiana L. Rocha, Ricardo Corassa Arrais, and Marcelo Bizerril
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The data obtained from the Maned Wolf Project in the Serra da Canastra region, southeast of Brazil have been used for ongoing conservation practices. As a first step, we conducted a general evaluation in order to define the conservation actions more suitable for the region and to address the main threats to the species survival locally. Within this analysis, we aim to observe how local people perceive their environment and the wolves. Thus we identified three 'necessities' to address in order to conduct a wildlife conservation program: (1)prevention of domestic dogs diseases; (2)management of livestock depredation by maned wolves; (3)people awareness improvement towards environmental themes. We collected samples from domestic dogs, tested for the main diseases and later vaccinated 500 dogs yearly, over three years, in the rural areas. Since this number represents only a part of their population, we concentrate our efforts on areas of higher density of dogs. Concerning conflicts, we learned that the percentage of losses by depredation varied among farms as well as the landowners' tolerance to the wolves. We installed chicken coops to prove the effectiveness of preventive methods against predators, lowering on 80% the depredation rate after installing the units. To motivate people to discuss their own problems in order to raise their awareness, we provide opportunities for debating local environmental issues. Thus, we conducted a collective book production on the region and implemented the 'Cine-Lobo'. The «Community Book» consisted of a gathering of 30 locals that worked together writing about their culture, history, environment, and economy. The 'Cine-Lobo' consists in the exhibition of 15-minutes films produced by the project on the wolf, local nature and conflicts, presented at schools, farms, and villages. and followed by circuit movies and a general discussion. We presented 30 sessions gathering over 2,200 people in the region.

MATRIX MATTERS: AGRICULTURAL EXPANSION AND THE PLIGHT OF THE MANED WOLF IN BRAZIL

Carly Vynne, Jader Soares Marinho-Filho, Ricardo A.B. Machado, Leandro Silveira, and Sam Wasser
University of Washington, USA

Emas National Park (ENP), Brazil, has historically been considered a stronghold for the survival of the maned wolf Chrysocyon brachyurus, which is endemic to the grasslands of central South America. Land clearing and agricultural intensification outside of ENP have been rapid and expansive and the Park now stands as a virtual island in a sea of agriculture. This project seeks to assess how these land use practices are affecting this critical population of maned wolves. We employ a number of novel, noninvasive methods to examine the population status and physiological health of the wolves in ENP and the surrounding region. Specially-trained detection dogs were used to non-invasively acquire more than 800 scat samples of maned wolves across a diversity of habitat conditions. DNA analysis of the samples was used to positively identify the species, gender, and number of unique individuals in the population. Spatial analyses and resource selection functions were applied to understand ranging behavior and habitat preferences. Steroid and thyroid hormones extracted from the samples are enabling us to establish profiles of the stress, reproductive, and nutritional health of the wolves in relation to their distance from the park, habitat use, diet, and parasite load. Together, these novel methods are providing critical information on the status and physiological health of an at-risk species on a scale that has rarely been achievable for wildlife. Such information will contribute to the conservation and management of maned wolves, simultaneously providing an important model for similar applications to other free-living, threatened or endangered species.

WHAT'S NEW WITH THE RARE AND ELUSIVE BUSH DOG (*SPEOTHOS VENATICUS*)?

Karen DeMatteo
University of Missouri-St. Louis, USA

Lacking knowledge of the basic ecological requirements of the bush dog (Speothos venaticus) has meant that developing conservation strategies for this small, social, neotropical canid has been impossible. While a few field studies have successfully studied the bush dog either directly or indirectly, the majority of information about the species' ecology is based on opportunistic field observations. These observations and knowledge from carnivore conservationists allowed for the first comprehensive analysis of the bush dog's current distribution, basic ecology, abundance and status, current public and governmental attitudes towards the species, and identification of species-specific conservation efforts. The complexity of the bush dog's ecology,

69 HEALTH PROMOTION AT SERRA DA CANASTRA NATIONAL PARK: BRINGING TOGETHER PUBLIC HEALTH AND ENVIRONMENTAL CONSERVATION

Rocha, F.L.; Arrais, R.C.; Pedrosa, L.L.; Santos, J. P.; Rodrigues, F.H.G.; Paula, R.C.; Camoleze, M.; Jansen, A.M.; D'Andrea, P.S. & Bizerril, M.X.

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Diseases transmitted among wildlife, humans and domestic animals have a great impact on public health, livestock and biodiversity conservation. In the Serra da Canastra National Park the contact between domestic and wild carnivores is frequent and may favors disease emergence. Therefore, in order to improve quality of life and environmental conservation, it is important to develop integrated programs that could reduce both human exposure to zoonotic diseases, as well as disease transmission from domestic to wild animals. Here, we propose a health promotion strategy based on three steps: (1) the diagnostic of local farmers' behavior towards wildlife and domestic carnivores and their perception of zoonotic disease transmission risk, (2) the elaboration of an educational material about zoonotic diseases and (3) the development of a participative education program regarding environmental conservation and public health. For the diagnostic, we had interviewed 53 farmers. In general, farmers (n=53) perceived dogs as other domestic animals like cows and chicken, besides the close contact between dogs and farmers. Only in three of the farms visited the dogs were correctly vaccinated, which reinforce the farmers' low perception of zoonotic disease transmission risk. We designed an educative brochure using easy and comprehensible language and well illustrated. The brochure included suggestions about good health habits, proper domestic animals management and environmental awareness. In parallel, we produced a video about the possible routes of parasite transmission in daily rural activities. The next step will be to use both the brochure and the video in communitarian meetings, farms and schools to imprint the relationship between the environmental conservation and animal and local people health. Then, community members will be invited to collaborate with us to design, implement and interpret a continued education project to improve human health and environmental quality.

70 HUNTED MAMMALS IN TWO INDIGENOUS VILLAGES OF WAYANA AND APARAI IN BRASILIAN AMAZON

Linke, Iori van Velthem Oliveira & Ana Cristina Mendes

Laboratório de Ecologia e Zoologia de Vertebrados, Instituto de Ciências Biológicas, Universidade Federal do Pará, Augusto Corrêa 01, Campus Guamá, Belém, PA, Brazil. CEP 66075-110; cris@ufpa.br

The game is very important for the maintenance of traditional ways of life of indigenous peoples in the Amazon. This study aims to characterize the use of mammals in two indigenous villages of Wayana and Aparai who lives in Parque Indígena do Tumucumaque, northern Pará State, in brasilian Amazon. The hunting data was monitored with 29 hunters in 60 days of data collection. The hunted animals were weighed, identified by sex and age. The interviews have raised 45 species of mammals occurring in the area, 25 of this are considered by hunting. Altogether 140 mammals were hunted from 20 different species, totaling 2,381 kg of biomass. The species more hunted was Tayassu peccary (n = 50; 1,350 kg), second was Ateles paniscus (n = 30, 261 kg). All the A. paniscus hunted were females. The survival curves of the most hunted mammals, T. peccary, A. paniscus, Cebus apella (n = 16) and Cuniculus paca (n = 12) points to a sharp withdrawal of adult and senile animals. The favorite game species were, in descending order, A. paniscus, C. apella, C. paca, T. peccary, Pecari tajacu, Tapirus terrestris, Alouatta macconnelli and Mazama americana. The analysis of sustainability of hunting suggests that only C. apella and A. paniscus are being over-exploited.

71 HUNTING STATISTICS REVEAL INFLUENCE OF CLIMATIC OSCILLATIONS AND DENSITY DEPENDENCE ON IRISH HARE POPULATIONS

Reid, N.; Dingerkus, K.; Montgomery, W.I.; Marnell, F.; Jeffrey, R.; Lynn, D.; Kingston, N. & McDonald, R.A.

Quercus, Queen's University Belfast; neil.reid@qub.ac.uk

Game bag records for Irish hares (Lepus timidus hibernicus Bell 1837) from throughout Ireland for the period 1846-1970 were analysed to assess long-term historical trends. Prior to 1914, bag indices fluctuated markedly but there was no overall trend. Thereafter, the annual hare index declined markedly (-88%), consistent with declines in hare bags elsewhere in Europe, reflecting a major decline in the number of hares shot. Time-series analysis suggests that the Irish population exhibited periodicity both before and after the initiation of the population decline. Prior to 1914 a significant decadal anti-phase was detected. Further analysis suggests that population growth rate was regulated by both intrinsic delayed density dependence, principally determined by the abundance of hares in the previous year, and extrinsic climatic factors, specifically the weather in autumn, described by the Northern Atlantic Oscillation (NAO) index. The NAO also exhibits a decadal periodicity and we suggest that the interaction of density dependent processes and the autumn NAO gives rise to the significant decadal periodicity observed in the Irish hare population prior to the major population decline. After 1914, there was a reduction in the amplitude and frequency of periodicity and the relative importance of the long-term decline in accounting for variance in abundance increased markedly. There is no reason to discount the marked influence of climate and related periodicity in contemporary hare population dynamics but the decline of game shooting has removed one tool for detecting this influence.

72 INTERACTION BETWEEN WILD CARNIVORES AND DOMESTIC DOGS AND ITS INFLUENCE ON DISEASE TRANSMISSION IN CHILE

Acosta-Jamett, Gerardo; Cleaveland, Sarah; Bronsvoort, Mark & Cunningham, Andrew

Instituto de Medicina Preventiva Veterinaria Facultad de Ciencias Veterinarias Universidad Austral de Chile; gacostajamett@yahoo.es

The domestic dog is the most abundant and widely distributed carnivore worldwide and is known to carry many infectious diseases

management outside of reserves. Information on demographic rates allows for well-informed population viability analyses to predict the maned wolf's future under different land use change scenarios.

[1] Silveira, L., Furtado, M.M., Tôrres, N.M., Sollmann, R., and Jácomo, A.T.A. 2009. Maned wolf density in a Central Brazilian grassland reserve. Journal of Wildlife Management 73:68–71.
[2] Jácomo, A.T.A., Kashivakura, C.K., Ferro, C., Furtado, M.M., Astete, S.P., Tôrres, N.M., Sollmann, R., and Silveira, S. in press. Home range and spatial organization of maned wolves in the Brazilian grasslands. Journal of Mammalogy.

Maned wolf conservation strategies in the Serra da Canastra region, Brazil.
Rogério Cunha de Paula*, Flávio Henrique G. Rodrigues, Ronaldo G. Morato, Eduardo Eizirik, Nucharin Songsasen, Jean Pierre Santos, Joares A. May Junior, Fernanda C. de Azevedo, Fabiana L. Rocha, Ricardo Corassa Arrais, and Marcelo Bizerril. rogerio@procarnivoros.org.br - Instituto Pró-Carnívoros, Brazil.

The data obtained from the Maned Wolf Project in the Serra da Canastra region, southeast of Brazil have been used for ongoing conservation practices. As a first step, we conducted a general evaluation in order to define the conservation actions more suitable for the region and to address the main threats to the species survival locally. Within this analysis, we aim to observe how local people perceive their environment and the wolves. Thus we identified three 'necessities' to address in order to conduct a wildlife conservation program: (1)prevention of domestic dogs diseases; 2)management of livestock depredation by maned wolves; (3)people awareness improvement towards environmental themes. We collected samples from domestic dogs, tested for the main diseases and later vaccinated 500 dogs yearly, over three years, in the rural areas. Since this number represents only a part of their population, we concentrate our efforts on areas of higher density of dogs. Concerning conflicts, we learned that the percentage of losses by depredation varied among farms as well as the landowners' tolerance to the wolves. We installed chicken coops to prove the effectiveness of preventive methods against predators, lowering on 80% the depredation rate after installing the units. To motivate people to discuss their own problems in order to raise their awareness, we provide opportunities for debating local environmental issues. Thus, we conducted a collective book production on the region and implemented the 'Cine-Lobo'. The «Community Book» consisted of a gathering of 30 locals that worked together writing about their culture, history, environment, and economy. The 'Cine-Lobo' consists in the exhibition of 15-minutes films produced by the project on the wolf, local nature and conflicts, presented at schools, farms, and villages. and followed by circuit movies and a general discussion. We presented 30 sessions gathering over 2,200 people in the region.

Maned wolf biology and ecology: insights from a 5-year study in the Serra da Canastra National Park (SCNP), Brazil.
Flávio Henrique G. Rodrigues, Nucharin Songsasen*, Ronaldo G. Morato, Fabiano L. Rocha, Jean Pierre Santos, Ricardo Corassa Arrais, Katerinne M. Spercoski, Rosana Morais, Marcelo Bizerril, Manoel L. da Fontoura-Rodrigues, Eduardo Eizirik, Melissa Rodden, David E. Wildt, Fernanda C. Azevedo, Joares A. May Junior, and Rogério Cunha de Paula. (SongsasenN@si.edu – Smithsonian's National Zoological Park.

The objectives of this project were to study maned wolf biology and to determine the impact of anthropogenic pressures on this species. Forty-three wolves were captured and radiocollared, and biological samples (blood, urine, feces and hair) were collected for genetic and health evaluations. Feces were also opportunistically collected for corticoid metabolite analysis. Home range sizes did not vary between the wet and dry seasons, or between genders (range: 15.56 to 114.29 km^2, mean ± SEM: 50.97 ± 32.47 km^2). However, reproductive seasonality significantly influenced home range size of females with smaller areas observed during the reproductive season. Individuals living in protected areas had larger home ranges than those living on farms. The latter tended to forage and use the remaining natural vegetation, suggesting that wolves may be able to adapt to habitat conversions if some natural areas are still present. Preliminary results of the genetic analyses (n = 16) showed that the wolf population in this region consists of three distinct families plus at least four unrelated individuals (possibly disperses from other areas). Serological analysis revealed that wolves (n = 31)

had been exposed to canine adenovirus, corona virus, canine distemper and canine parvovirus, while a high proportion of the domestic dogs living on farms (n = 50) also tested positive for these pathogens. Corticoid excretion varied among sampling locations ($P < 0.05$), with the highest baseline concentration observed in samples collected on farms (127.8 ± 18.2 versus 26.2 ± 1.1 ng/g feces). Seminal traits of three captured wolves were similar to those previously reported for captive individuals. Overall, our findings suggest that although anthropogenic pressures may slightly impact the ecology, behavior and (perhaps) reproduction of maned wolves, 'stress' associated with direct or indirect interaction with humans and domestic species may cause an increase in disease susceptibility and poor health.

Agricultural expansion and the plight of the maned wolf (*Chrysocyon brachyurus*) in the Brazilian Cerrado.

Carly Vynne*, Jader Soares Marinho-Filho, Ricardo A.B. Machado, Leandro Silveira, and Sam Wasser. (cvynne@u.washington.edu – University of Washington, USA.

Emas National Park (ENP), Brazil, has historically been considered a stronghold for the survival of the maned wolf *Chrysocyon brachyurus*, which is endemic to the grasslands of central South America. Land clearing and agricultural intensification outside of ENP have been rapid and expansive and the Park now stands as a virtual island in a sea of agriculture. This project seeks to assess how these land use practices are affecting this critical population of maned wolves. We employ a number of novel, noninvasive methods to examine the population status and physiological health of the wolves in ENP and the surrounding region. Specially-trained detection dogs were used to non-invasively acquire more than 800 scat samples of maned wolves across a diversity of habitat conditions. DNA analysis of the samples was used to positively identify the species, gender, and number of unique individuals in the population. Spatial analyses and resource selection functions were applied to understand ranging behavior and habitat preferences. Steroid and thyroid hormones extracted from the samples are enabling us to establish profiles of the stress, reproductive, and nutritional health of the wolves in relation to their distance from the park, habitat use, diet, and parasite load. Together, these novel methods are providing critical information on the status and physiological health of an at-risk species on a scale that has rarely been achievable for wildlife. Such information will contribute to the conservation and management of maned wolves, simultaneously providing an important model for similar applications to other free-living, threatened or endangered species.

What's new with the rare and elusive bush dog (*Speothos venaticus*)?

Karen DeMatteo. kdematteo@aol.com - University of Missouri-St. Louis, USA.

Lacking knowledge of the basic ecological requirements of the bush dog (*Speothos venaticus*) has meant that developing conservation strategies for this small, social, neotropical canid has been impossible. While a few field studies have successfully studied the bush dog either directly or indirectly, the majority of information about the species' ecology is based on opportunistic field observations. These observations and knowledge from carnivore conservationists allowed for the first comprehensive analysis of the bush dog's current distribution, basic ecology, abundance and status, current public and governmental attitudes towards the species, and identification of species-specific conservation efforts. The complexity of the bush dog's ecology, vulnerability to disease and poaching, and association with partially or fragmented habitat (20% of locations) suggest that widespread destruction of natural resources and lack of legal reinforcement are the greatest threats facing the bush dog. Long-term survival of the bush dog will likely depend on increased protection, public education campaigns, and additional field data. With the latter, efforts to collect detailed ecological data on the bush dog continue with researchers using both standard field techniques, such as radio collars, and innovative noninvasive techniques, such as detection dogs, genetics, and GIS analyses. The use of noninvasive techniques has tremendous potential with rare species because it eliminates the dependence of target species visitation rate and switches the focus to locating evidence, such as scat, associated with the natural behaviour and movement patterns of the species. Initial trials using noninvasive techniques have demonstrated that they can provide species-specific data on the bush dog despite the rugged terrain and dense forest vegetation they may occupy. The ability to effectively gather much needed ecological data over large areas would allow comprehensive conservation strategies to be developed for the bush dog.

Historical and current geographic distribution of *Chrysocyon brachyurus* (Carnivora: Canidae).
Diego Queirolo*, José Roberto Moreira, Lucía Soler, Flávio G.H. Rodrigues, Andrés A. Pautasso, José Luis Cartes, Valéria Salvatore, and Louise H. Emmons. diqueirolo@yahoo.com.br - Universidade de São Paulo, Brazil.

The maned wolf, *Chrysocyon brachyurus*, is a monotypic South American endemic canid chiefly found in grassland-dominated regions. We compare its current and historical distributions and propose causal hypotheses for observed changes. We compiled recent presence-absence data from reliable observations, interviews, field studies and museum specimens. Historical data was derived from the accounts of early naturalists and explorers and from paleontological records. Comparison of the two distribution maps shows recent range expansion only on the eastern side, in the Brazilian States of Minas Gerais, Espírito Santo, São Paulo y Rio de Janeiro. This expansion is associated with the deforestation of the Atlantic forests and conversion of habitat to grasslands for cattle range. The northern, northeastern, and eastern sectors of the geographic range have not yet experienced significant modifications, and the species persists in central Brazil, northern and eastern Bolivia, and southeastern Peru. The largest range retractions have occurred on the southern limits. Maned wolves are still present in the Argentine provinces of Formosa, Chaco, Corrientes, the northern half of Santa Fe, northeastern Córdoba and southeastern Santiago del Estero, as well as two records from Uruguay and rare records from extreme NE and SE Rio Grande do Sul. Historically the species was present in nearly all of Rio Grande do Sul, Uruguay, and south to at least the 38th parallel of Argentina. The probable cause of the southern range restrictions is intense anthropic pressure coupled with limiting abiotic factors such as temperature and humidity. Our results show the need to revise our views of how habitat modifications are affecting the range distribution of *C. brachyurus*, so that range-wide conservation strategies can be improved and coordinated.

The status of dholes (*Cuon alpinus*) in Thailand: a preliminary report.
Kate E. Jenks, Peter Leimgruber, Todd K. Fuller, JoGayle Howard, Sawai Wonghongsa, Naris Bhumpakphan, and Nucharin Songsasen. songsasenN@si.edu - Smithsonian's National Zoological Park.

The status of the dhole in Southeast Asia is poorly understood. In Thailand, dholes are found in protected areas that support large ungulate populations. Although the population size is unknown, and the species has been listed as endangered, opportunistic encounters by park rangers, villagers and tourists with dholes in protected areas have created public perception that dholes are overabundant. Our objective was to generate baseline information on dhole populations in Thailand, knowledge that will help decision makers develop effective management plans for the species. The study was conducted at Khao Ang Rue Nai Wildlife Sanctuary, Thailand. We conducted 200 interview surveys in villages surrounding the eastern boundary of the sanctuary. Respondent age ranged from 18 to 81 years (mean = 50.2 y). The majority (54%) of the respondents were able to correctly identify dhole from photographs. Only 27 (13.5%) of the interviewees reported dhole sightings within the last 12 months. However, 81% of respondents were of the opinion that dhole populations in the area are stable. Camera traps (70 locations; 1,999 total trap nights) captured 497 wildlife photos, with 13 carnivore species, including one pack of dholes (6 members). Camera traps also documented the presence of domestic dogs (n = 4) in the protected area. Our findings suggest that dholes occur at low density in the sanctuary. The presence of domestic dogs inside the sanctuary suggests a disease transmission threat to dhole and carnivore populations in this region. The study is supported by the National Science Foundation, Friends of the National Zoo, Walcott Endowment Fund and AZA's Conservation Endowment Fund.

Risk evaluation of parasite transmission between domestic dogs and maned wolves in Brazilian cerrado.
Fabiana Lopes Rocha*, Rogério Cunha de Paula, Nucharin Songsasen, Flávio H.G. Rodrigues, Ricardo Corassa Arrais, Jean Pierre Santos, Moema Camoleze, Marcelo Ximenes Bizerril, Ana Maria Jansen, and Paulo Sérgio D'Andrea. Rochabia2@yahoo.com.br - Instituto Pró-Carnivoros.

Disease spillover from domestic to wild carnivores is increasingly recognized as a conservation threat. In the Serra da Canastra National Park (SCNP) the contact between domestic and wild carnivores is

constant. On one side, maned wolves had been seen circulating in farms. On the other, domestic dogs had frequent excursions to SCNP areas. In addition, previous studies demonstrated that wolves had been exposed to canine adenovirus, corona virus, canine distemper and canine parvovirus, while a high proportion of the domestic dogs living in farms also tested positives for these pathogens. Our objective was to evaluate the risk of parasite transmission between domestic dogs and maned wolves. For this, we gathered data on the demographics and ownership of dogs in farms surrounding the SCNP through the application of questionnaires and discussions with residents. We evaluated direct and indirect contact rates between dogs and maned wolves using GPS-telemetry technique. The average number of domestic dog was 3.05 (± 2.45) dogs per farm. Only three of the 53 farms visited had dog's vaccinations up-to-date and seventeen had dogs' reproduction control. We captured and equipped 3 wolves with GPS collars (one male and two females). So far, we had thereabout 2,000 locations of each GPS collared individual. Although we haven`t estimated the contact rates between domestic dogs and maned wolves yet, the graphic analysis of the locations indicated that the collared wolves went inside and outside the SCNP and used much more the surrounding area. From ours findings, it is clear that they have opportunities for contact. Additional research is therefore necessary to determine whether disease transmission is occurring and to quantify the risk. Yet, wherever opportunities exist for interaction, disease spillover represent a disease risk for both wild and domestic populations from SCNP, especially if dogs owners usually don`t manage their dogs properly.

Changes in kit fox defecation patterns during the reproductive season can bias non-invasive surveys.

Katherine Ralls, Sandeep Sharma, Deborah Smith, Samantha Bremner-Harrison, Brian Cypher, Jesus Eduardo Maldonado*. maldonadoj@si.edu – National Zoological Park/Smithsonian Institution.

Noninvasive survey methods based on analyzing DNA extracted from hairs or feces can be useful for carnivores that are difficult to study by other methods. Studies of the possible errors associated with these methods have concentrated on genotyping errors rather than possible differences in fecal deposition patterns among sex or age classes. We investigated possible changes in fecal deposition patterns associated with reproduction in San Joaquin kit foxes (*Vulpes macrotis mutica*), a seasonally breeding, socially monogamous species in which females give birth in mid-February to mid-March. We used trained dogs to collect fresh scats on a 2-km transect in the home range of each of 11 radio-collared female kit foxes in January, February and March 2008 and attempted to determine the sex of each scat we collected by amplifying zinc finger protein genes. We sexed 135 scats in January, 148 in February, and 154 in March. If the scats of both sexes were equally easy to find, we expected to find a 1:1 sex ratio in the scats collected each month. In January the sex ratio of the scats was not different from the expected 1:1. However, in February there were almost 2 male scats for every female scat and in March there were more than 8 male scats for every female scat, both of which were significantly different than expected. In March, we found more male scats on all 11 transects than in January and fewer female scats on 10 of the 11 transects. These results suggest that both sexes show changes in fecal deposition patterns around the time pups are born that make it easier to find male scats and harder to find female scats. The effect of these changes on the results of noninvasive surveys will depend on the purpose of the survey.